



AP/2FW

October 24, 2005

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Martha S. Sloan

*Martha S. Sloan*  
(signature)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
David H. Palmer	)	Group Art Unit: 3611
	)	
Serial No. 10/666,173	)	Examiner: Kevin Hurley
	)	
Filed: September 19, 2003	)	Appeal No.
	)	
For: ELONGATE RECEIVER TUBE AND	)	Attorney Docket: 1-37091
METHOD OF MAKING THE SAME)	)	

October 24, 2005

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

AMENDED BRIEF ON APPEAL

Honorable Sir:

This is an Appeal from the action of the Examiner dated March 15, 2005, finally rejecting Claims 1, 2, 4, 6, and 7 in the above-identified patent application. Appellant filed a Notice of Appeal, which has an effective date of June 13, 2005. A Brief on Appeal was filed on August 1, 2005 under the provisions of 37 CFR §41.37.

A Notification of Non-Compliant Appeal Brief dated October 18, 2005 was mailed by

the Examiner. The Examiner stated:

“The brief does not number the items as required by 37 CFR 41.37(c) as effective 13 September 2004. Specifically, is no statement of the grouping of claims necessary and appendices (ix) and (x) are missing.”

In the Amended Brief on Appeal, the headings have been numbered according to the 37 CFR §41.37(c)(1) sub-paragraph numbers. A heading and section for Grouping of Claims has been removed. Additionally, appendices (ix) and (x) have been added.

The Commissioner is hereby authorized to charge necessary charges or credit overpayments to Dep. Acct. No. 50-3156. A decision on whether to request an oral hearing will be delayed until after the Examiner's Answer has been received.

#### **I. REAL PARTY IN INTEREST**

The inventor, David H. Palmer, has assigned all rights in the invention and instant application to Jems of Litchfield, the real party in interest.

#### **II. RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences which will directly affect, or be directly affected by, or have a bearing on, the Board's decision in this pending appeal.

#### **III. STATUS OF CLAIMS**

Claims 1, 2, 4, 6, and 7 are pending in the application and are being appealed herein.

**IV. STATUS OF AMENDMENTS**

There are no amendments pending in the application.

**V. SUMMARY OF CLAIMED SUBJECT MATTER**

Appellant's invention, as set forth in Claim 1, is directed to an elongate receiver tube for a trailer hitch assembly. The inventive elongate receiver tube comprises the following:

- A) a hollow elongate tube having an internal rectangular cross-section and having a first end adapted to receive a trailer hitch bar having a complimentary outer rectangular cross-section, (page 4, lines 4-19; Figs. 1-3)
- B) the first end of said tube having an integral reinforcement construction wherein the first end of said tube is provided with an outwardly extending fold formed of substantially two thicknesses of the tube, (page 4, line 20 through page 5, line 6; Figs. 1-3)
- C) wherein the outermost end portions are folded against one another by a cold forming process to form a peripheral outwardly extending fold at the first end of said tube, (page 4, line 20 through page 6, line 15; Figs. 1-3)
- D) the fold having an inner dimension which is substantially the same as an inner dimension of said tube and an outer dimension greater than an outer dimension of said tube, (page 5, lines 2-6; Fig. 3)
- E) wherein the fold has a rounded outer surface. (Amendment dated January 14, 2005; Figs. 1-3)

Claim 2 depends from and contains at least the same features and limitations as Claim 1.

Independent Claims 4 and 6 contain at least the same features and limitations as Claim 1.

Claim 7 depends from and contains at least the same features and limitations as Claim 6.

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

### **Issue I:**

Whether an amendment filed January 14, 2005 introduces new matter into the disclosure under 35 USC §132.

### **Issue II:**

Whether Claims 1, 2, 4, 6, and 7 are unpatentable under 35 USC § 112, first paragraph, as failing to comply with the written description requirement.

### **Issue III:**

Whether Claims 1, 2, 4, 6, and 7 are unpatentable under 35 USC §102(e) as being anticipated by U.S. Pat. No. 6,408,672 to Roe et al.

### **Issue IV:**

Whether Claims 1, 2, 4, 6, and 7 are unpatentable under 35 USC §102(b) as being anticipated by U.S. Pat. No. 5,203,194 to Marquardt.

## **VII. ARGUMENT**

### **Argument I:**

The Examiner objected to an amendment filed January 14, 2005 under 35 U.S.C. § 132 as introducing new matter. The Examiner stated:

“The added material which is not supported by the original disclosure is as follows: That the reinforcement flange is rounded or orbicular or protuberant, for example. Moreover, the specification does not support the recitation that the fold has a substantially rounded outer surface as previously recited in claim 3, now canceled.

Applicant is required to cancel the new matter in the reply to this Office Action.”

In the originally filed parent patent application filed on March 12, 2002, from which priority is claimed, the flange of the tube illustrated in the drawings included a rounded outer surface. The rounded outer surface, generally depicted by the reference numeral 26, is clearly illustrated in each of Figs. 1, 2, and 3 of Appellant’s patent application. The shading lines shown in Figs. 1 and 2 provide irrefutable evidence that the flange includes a rounded, orbicular, or protuberant outer surface. 37 CFR §1.84(m) states in part:

The use of shading in views is encouraged if it aids in understanding the invention and if it does not reduce legibility. Shading is used to indicate the surface or shape of spherical, cylindrical, and conical elements of an object.

Contour lines and shading lines would not have been used in the manner shown if the surface was intended to be flat or planar, instead of rounded, orbicular, or protuberant.

The rounded outer surface is especially apparent in Fig. 3. It is indisputable, especially in view of Fig. 3, that the outer surface shown is rounded, orbicular, or protuberant. Had a linear or straight surface been intended on the drawing, it would have been drawn as such. Drawing a straight line and drawing a curved line require different drawing instruments. Thus, a conscious effort on the part had to have been made to draw the curved line representing the rounded, orbicular, or protuberant surface. The contour lines or shading lines shown in Figs. 1 and 2 also evidence this intent.

Since the rounded surface was drawn as such in each and every figure, the information is part of the original disclosure and does not constitute new matter. Section 2163.06 of the MPEP states in part:

“ . . . information contained in any one of the specification, claims, or drawings of the application as filed, may be added to any other part of the application without introducing new matter.” (emphasis added)

Since the rounded outer surface is clearly shown in the drawings as filed, amendment of the specification to include reference to the rounded shape and a recitation thereof in the claims is proper and does not introduce new matter. Thus, the rounded outer surface of the flange was fully supported by the original disclosure.

Since the rounded outer surface is supported by the original disclosure and does not constitute new matter, the objection of the Examiner is improper.

#### Argument II:

The Examiner rejected Claims 1, 2, 4, 6, and 7 under 35 U.S.C. §112, first paragraph, and stated:

“The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. The originally filed specification does not support the recitation that the fold has a substantially rounded outer surface.”

The specification was amended in the Amendment filed January 14, 2005 to include the description “The folded thicknesses 28, 30 result in an outer peripheral surface of the reinforcement flange 26 which is rounded as most clearly shown in Figs. 2 and 3. Rounded as used herein means orbicular or protuberant, for example.” As discussed above, the inclusion of this description is proper and cannot be considered new matter since the rounded outer surface of the flange is clearly shown in Figs 1-3 as originally filed.

Since the recitation of the rounded, orbicular, or protuberant does not constitute new matter, the rejection based on 35 U.S.C. §112, first paragraph, is improper.

Argument III:

The disclosure of Roe is clearly directed to a flange having an outer surface with a predetermined shape. The shape of the outer surface portion of the flange of Roe is rectangular in cross section, having straight or linear sides. Figs. 3d and Figs 4d of Roe, which clearly show the shape of the outer surface portion of the flange, are included below.

FIG. 3d.

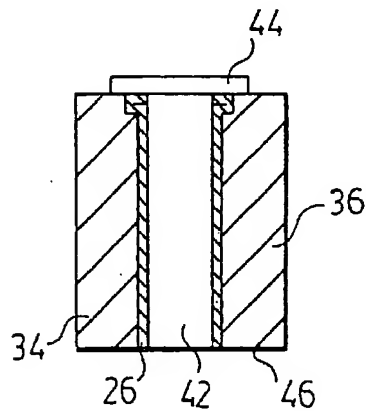
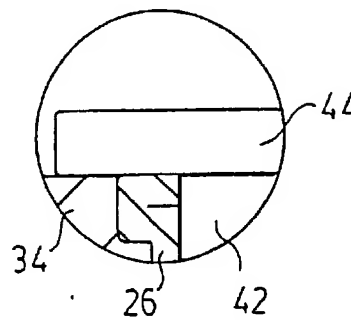


FIG. 4d.



Roe further discloses in column 3, lines 19-40, that the tube material used to form the receiver tube is forced, by a pressure applied thereto, into the void space 41 until it has completely folded upon itself and occupies the void space. In order to completely fill the void space, the volume of the void space is calculated. Then, the volume of tube material required to completely fill the void space is measured. The amount of material required to completely fill the void space remains outside of a die cavity prior to a forming operation. During the forming operation, the material is forced to fold upon itself and fill the void space. An adjustment is made in the preferred embodiment for a compression of the tube material in the void space.

When the tube material is forced into and compressed in the void space, the outer surface of the flange of Roe is determined by the shape of the void space. Therefore, since the void space has a rectangular shape in cross section, with straight or linear sides, the outer surface of the flange has a rectangular shape in cross section, with straight or linear sides. No curvature exists. The outer surface of the flange is not rounded, orbicular, or protuberant to any degree, let alone to the same degree as Appellant's structure as indicated by the Examiner. Quite simply, the tube material of Roe is compressed into the void space and takes the shape of that void space, which is rectangular in cross section with straight or linear sides.

Additionally, in the March 15, 2005 Office Action, the Examiner argues that Fig. 2 of Roe is virtually identical to Fig. 3 of Appellant's application. This is simply not true. Fig. 2 of Roe and Fig. 3 of Applicants patent application are included below.

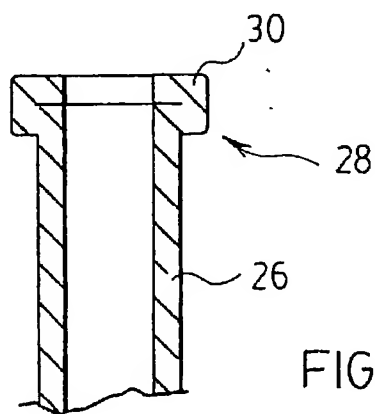


FIG. 2.

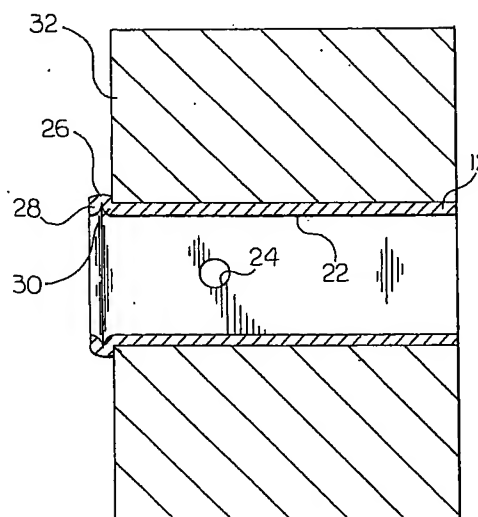


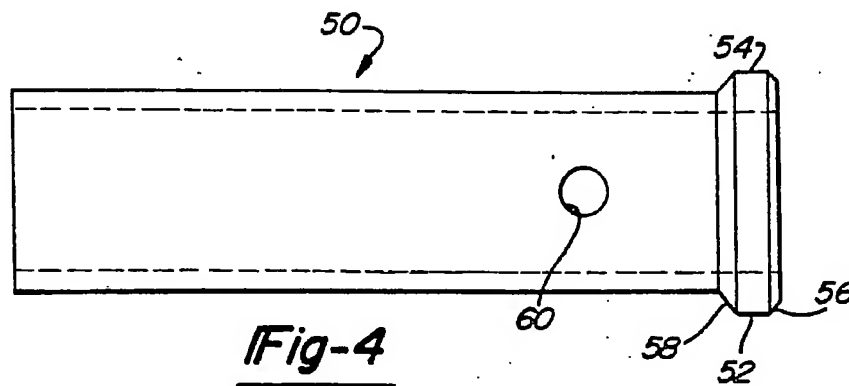
FIG. 3

The outer surface shown in section in Roe is clearly linear, and the outer surface shown in section in Appellant's Fig. 3 is clearly rounded. It is unclear how the outer surfaces can be considered identical. The receiver tubes are formed by different processes resulting in different structures having different shapes.

Due to the structural differences noted, it is submitted that independent Claims 1, 2, 4, 6, and 7 are not anticipated under 35 USC §102(e) by Roe.

Argument IV:

The argument presented for against Roe also applies to Marquardt. The disclosure of Marquardt is directed to a flange having an outer surface with a predetermined shape, determined by a bead forming region 66. The shape of the outer surface portion of the flange of Marquardt includes a main portion which is distinctly linear or straight and not rounded, orbicular, or protuberant. There is no degree of curvature to the surface. Straight or linear inclined portions flank opposing sides of the main linear or straight portion. Fig. 4 of Marquardt, which clearly shows the shape of the outer surface portion of the flange, is included below.



Similar to Roe, the shape of the outer surface of the flange is determined by a recess into which the tube material is forced. The recess includes linear or straight edges. Thus, the surface of the flange formed therefrom cannot be rounded, orbicular, or protuberant, and is clearly not rounded, orbicular, or protuberant to the same degree as claimed by applicant. No curvature exists.

Conclusion:

An amendment filed January 14, 2005 did not introduce new matter. Therefore, the outstanding objection of the Examiner should be reversed by the Board.

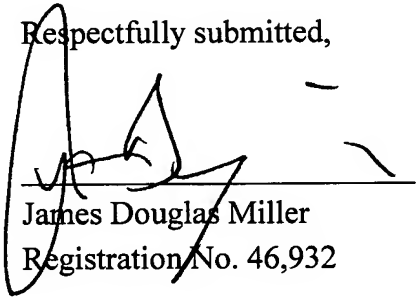
Claims 1, 2, 4, 6, and 7 comply with the written description requirement under 35 USC § 112, first paragraph. Thus, the Examiner's outstanding final rejection of Claims 1, 2, 4, 6, and 7 should be reversed by the Board.

Claims 1, 2, 4, 6, and 7 are not anticipated by U.S. Pat. No. 6,408,672 to Roe et al., and the Examiner's outstanding final rejection of Claims 1, 2, 4, 6, and 7 should be reversed by the Board.

Claims 1, 2, 4, 6, and 7 are not anticipated by U.S. Pat. No. 5,203,194 to Marquardt. Therefore, the Examiner's outstanding final rejection of Claims 1, 2, 4, 6, and 7 should be reversed by the Board.

Accordingly, Appellant respectfully submits that Claims 1, 2, 4, 6, and 7 should be allowed.

Respectfully submitted,



James Douglas Miller  
Registration No. 46,932

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132 W. Second Street  
Perrysburg, Ohio 43551  
(419) 874-1100



1-37091

## **VIII. CLAIMS APPENDIX**

1. An elongate receiver tube for a trailer hitch assembly comprising:  
a hollow elongate tube having an internal rectangular cross-section and having a first end adapted to receive a trailer hitch bar having a complimentary outer rectangular cross-section, the first end of said tube having an integral reinforcement construction wherein the first end of said tube is provided with an outwardly extending fold formed of substantially two thicknesses of the tube, wherein the outermost end portions are folded against one another by a cold forming process to form a peripheral outwardly extending fold at the first end of said tube, the fold having an inner dimension which is substantially the same as an inner dimension of said tube and an outer dimension greater than an outer dimension of said tube, wherein the fold has a rounded outer surface.
  
2. The receiver tube according to Claim 1, wherein the fold has a flat face spaced from the first end of said tube formed against an outer wall of the clamp.

4. An elongate receiver tube for a trailer hitch assembly comprising:  
a hollow elongate tube having an internal rectangular cross-section and an external rectangular cross-section, said tube having a first end adapted to receive a trailer hitch bar having a complimentary outer rectangular cross-section to be slidably received in the internal rectangular cross-section of said tube, the first end of said tube having an outwardly extending flange portion formed by a cold forming process, the flange provided with an outwardly extending fold formed of substantially two thicknesses of the tube, the flange portion having an inner dimension which is substantially the same as an inner dimension of said tube and an outer dimension greater than an outer dimension of said tube, wherein the flange portion has an orbicular outer surface.

6. An elongate receiver tube for a trailer hitch assembly comprising:  
a hollow elongate tube having an internal rectangular cross-section and an external rectangular cross-section, said tube having a first end adapted to receive a trailer hitch bar having a complimentary outer rectangular cross-section to be slidably received in the internal rectangular cross-section of said tube, the first end of said tube having a fold with a protuberant outer surface, the fold formed by a cold forming process, the fold formed of substantially two thicknesses of the tube, the flange portion having an inner dimension which is substantially the same as an inner dimension of said tube and an outer dimension greater than an outer dimension of said tube.

7. The receiver tube according to Claim 6, wherein a side of the fold facing away from the first end has a flat face formed against a wall of the clamping structure, the wall being external of the clamping structure.

**IX. EVIDENCE APPENDIX**

The following evidence was relied upon by the Appellant:

1. Declaration of Inventor dated November 14, 2003 entered in the record by the Examiner on November 17, 2004 evidenced by a statement of the Examiner in an Office Action dated December 15, 2004.
2. Declaration of Inventor dated March 22, 2004 entered in the record by the Examiner on March 24, 2004 evidenced by a statement of the Examiner in an Office Action dated December 15, 2004.

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Postal Service as first class mail in an envelope addressed to:  
Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date set forth below.



James Hill  
(signature)  
Date of signature November 14, 2003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
David H. Palmer	)	Group Art Unit:
	)	
Serial No. 10/666,173	)	
	)	Examiner:
Filed: September 19, 2003	)	
	)	
For: ELONGATE RECEIVER TUBE AND	)	Attorney Docket: 1-37091
METHOD OF MAKING THE SAME	)	
	)	

November 14, 2003

Mail Stop Non-Fee Amendment  
Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

REMARKS IN SUPPORT OF INVENTOR'S DECLARATION

Honorable Sir:

Please supplement the above-identified application as indicated on the following  
pages.

Respectfully submitted,

James D. Miller  
Reg. No. 46,932

MacMillan, Sobanski & Todd, LLC  
One Maritime Plaza, Fourth Floor  
720 Water Street  
Toledo, Ohio 43604  
(419) 874-1100

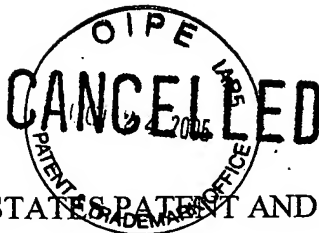
### REMARKS

The following remarks are filed in support of the attached Declaration of Inventor.

The novel elongate receiver tube invented by applicant is a product which maximizes strength and durability, while simultaneously reducing the production costs. The characteristics of the improved receiver tube are evidenced in the attached comparative testing report which compares the applicant's structure using cold forging (Jems), a welded collar structure, and a hot forged structure. In support of the improved characteristics detailed in the testing report, a Declaration of Inventor is also attached. The Declaration sets forth facts concerning the testing of the product and the test results. During the testing, no cracks appeared in applicant's structure. However, cracks did form in the welded and hot forged receivers tested.

The novel elongate receiver tube represents a significant improvement over receiver tubes of the prior art. Substantial commercial success has been experienced by applicant as evidenced by the fact that approximately one million of the receiver tubes of the invention have been sold. The commercial success is due to the improved strength and durability characteristics, as well as the minimized production costs.

Should the Examiner feel it desirable to further explore the information discussed above or included in the Declaration of Inventor, Applicant requests that an interview be arranged with the Examiner in a sincere effort to expedite the prosecution of the application. In this regard, should the Examiner consider such an interview with the applicant present, it is requested that the Examiner contact applicant's attorney by telephone.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:  
David H. Palmer

Serial No. 10/666,173

Filed: September 19, 2003

For: ELONGATE RECEIVER TUBE AND  
METHOD OF MAKING THE SAME



) Group Art Unit:

) Examiner:

) Attorney Docket 1-37091

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November 6, 2003

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

DECLARATION OF INVENTOR

Honorable Sir:

I, David H. Palmer, declare the following:

1. THAT, I am the inventor of the subject matter of the above-identified patent application;
2. THAT, from 1996 to present, I have been employed by Jems of Litchfield, assignee of the above application;
3. THAT, my present position with Jems is Vice President and Owner;
4. THAT, under my direction and control, the sample receivers identified below were prepared for comparative testing, to be conducted by Patzip Testing Laboratories;
5. THAT, I developed a test for comparing the relative strength and durability of a cold formed receiver design as manufactured by Jems, a typical welded construction receiver, and a typical hot forged receiver;
6. THAT, the test I developed involved inserting 2.1 inches of a ball mount shank into one end of each receiver tested;
7. THAT, the other end of each of the receivers had a rigidly mounted solid bar inserted therein and welded thereto;
8. THAT, the distance from the end of the solid bar to the end of the ball mount shank

was held constant for each sample, thus removing influence to strength characteristics due to the overall length of each sample;

9. THAT, a load of 7000 pounds was applied on the ball mount shank at a point 8.0 inches from the receiver lip;
10. THAT, all of the sample receivers test were produced from the same steel, namely ASTM 500B;
11. THAT, the permanent change in ball axis or deflection was measured for each sample receiver, the results of which are presented in the attached test report (see test results 1b, 1c, and 1d in the attached test report and see Exhibit A attached for the test setup for each sample receiver);
12. THAT, a visible crack was observed in each of the welded sample receiver and the hot forged sample receiver;
13. THAT, no cracks or other defects were observed in the cold formed sample receiver as produced by Jems;
14. THAT, the cold formed sample receiver as manufactured by Jems was designated as Design #1, the dimensions as tested being two inches square internal diameter, 7.75 inches long, and a wall thickness of 0.24 inches;
15. THAT, the welded construction sample was designated as Design #2, the dimensions as tested being two inches square internal diameter, 7.8 inches long, and a wall thickness of 0.23 inches;
16. THAT, the hot forged construction sample was designated as Design #3, the dimensions as tested being two inches square internal diameter, 6.75 inches long, and a wall thickness of 0.23 inches;
17. THAT, the wall thicknesses of all receivers represent the standard wall thickness for the type of sample used in the industry and the tolerances allow for +/- 10 percent for use in the industry; and
18. THAT, a slight wall thickness increase occurs in the production of the cold formed receiver as manufactured by Jems, which is the reason for the slightly larger wall thickness over the welded and hot forged receivers;
19. THAT, due to the improved strength of the cold forged receiver produced according to the method as claimed in the above-identified patent application, substantial

commercial success has been experienced;

20. THAT, approximately one million receiver tubes produced according to the method as claimed in the above-identified patent application have been sold to date; and

21. THAT, as shown in the test report, a significant difference with respect to strength is achieved by producing a receiver in accordance with my invention.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States code, and that such willful false statements may jeopardize the validity of the above-referenced application or any patent issuing thereon.

Date: 11/7/03

David H. Palmer

David H. Palmer

PROJECT NUMBER: 3618 200-8888

PAGE: 1 of 4

DATE: January 15, 2001


**PATZIG TESTING LABORATORIES**3922 Delaware Avenue  
Des Moines, Iowa 50313-2597**REPORT OF HITCH TESTS**In Accordance With Customer Requirements  
Weight Carrying (Tongue Weight Comparison)  
Part No. (3 Designs)Prepared for:  
**ITEMS OF LITCHFIELD, INC.**  
Attn: Dave Palmer  
174 Simpson Drive, PO Box 449  
Litchfield, ME 49252

Client Purchase Order Number: 455

Prepared by:

Carl Andreasen  
Senior Engineering Technician  
Mechanical/Metallurgical Dept.  
Phone: (515) 266-5101  
FAX 515 262-1910

Reviewed by:

Timothy B. Cox, P.E.  
Product Service Manager  
Mechanical/Metallurgical Dept.

The test results contained in this report pertain only to the samples submitted for testing and not necessarily to all similar products.



PROJECT NUMBER: 3618 200-8888

PAGE: 2 of 4  
DATE: January 15, 2001

## REPORT OF HITCH TESTS

### INTRODUCTION:

This report presents the results of tongue load tests performed on three different designs of receiver tube in accordance with our clients request. This work was requested by Dave Palmer of JEMS of Litchfield, Inc. The product was received on December 12, 2000 with the work conducted on January 11 and 12, 2001.

### SUMMARY OF RESULTS:

The three designs allowed the following change in ball axis when tested under identical loading conditions.

Description / Design	Change in Ball Axis, Degrees
JEMS (crimped collar)	16
Standard (welded collar)	17
Hot Forged (forged collar)	15

### SAMPLE DESCRIPTION:

Device / Application: Hitch, Three different receiver tube sections - each with a different design of reinforced lip.

#### Design No. 1 JEMS

Characteristic Design: Nominal 2" sq. LD., 7.75" long (0.24" wall), with a crimped lip construction.

### TEST RESULTS:

5" of the test ball mount shank was inserted into the sample and pinned		
Direction	Load, 6.0" from receiver lip (lbs.)	Permanent Change in Ball Axis (degrees)
a. Downward (Tongue Load)	12,800	2

PROJECT NUMBER: 3618 200-8888

PAGE: 3 of 4  
DATE: January 15, 2001

**TEST RESULTS:** (Design No. 1 -continued) *JEMS*

2.1" of the test ball mount shank was inserted into the sample (not pinned and with tube seam to the side)		
Direction	Load, 8.0" from receiver lip (lbs.)	Permanent Change in Ball Axis (degrees)
b. Downward (Tongue Load)	7,000	16

Note: No visible cracks appeared in the lip area in the receiving tube.

**Design No. 2** *WELDED COLLAR*

Characteristic Design: Nominal 2" sq. I.D., 7.8" long (0.23" wall), with a weld-on lip construction.

**TEST RESULTS:**

2.1" of the test ball mount shank was inserted into the sample (not pinned and with tube seam to the side)		
Direction	Load, 8.0" from receiver lip (lbs.)	Permanent Change in Ball Axis (degrees)
c. Downward (Tongue Load)	7,000	17

Note: A visible crack appeared in one bottom corner of the lip area in the receiving tube.

PROJECT NUMBER: 3618 200-8888

PAGE: 4 of 4  
DATE: January 15, 2001

TEST RESULTS: (-continued) *HOT FORGED*

Design No. 3

Characteristic Design: Nominal 2" sq. I.D., 6.75" long (0.23" wall), with a hot forged lip construction.

TEST RESULTS:

2.1" of the test ball mount shank was inserted into the sample (not pinned and with tube seam to the side)		
Direction	Load, 8.0" from receiver lip (lbs.)	Permanent Change in Ball Axis (degrees)
d. Downward (Tongue Load)	7,000	15

Note: Visible cracks appeared in both bottom corners of the lip area in the receiving tube.

DISPOSITION OF SAMPLES:

The test samples will be discarded thirty days from the date of this report unless further instructed by the client.

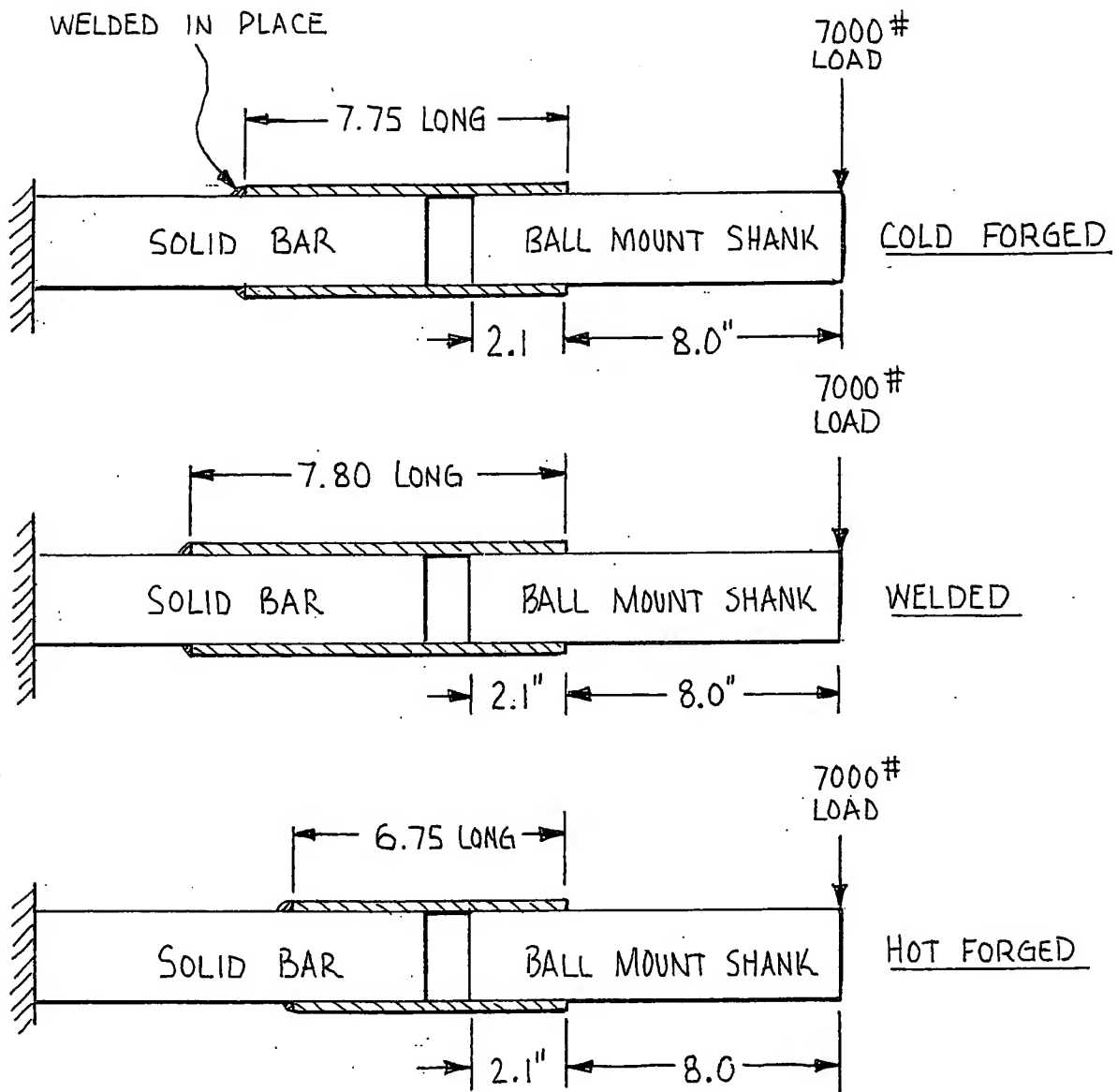


EXHIBIT A

C IFICATE OF MAILING BY FIRST CLASS L

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Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date set forth below.



*Chen Hui*  
(signature)

Date of signature March 22, 2004

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

David H. Palmer

)

Group Art Unit:

)

Serial No. 10/666,173

)

Examiner:

)

Filed: September 19, 2003

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For: ELONGATE RECEIVER TUBE AND  
METHOD OF MAKING THE SAME

)

Attorney Docket 1-37091

)

March 22, 2004

Mail Stop Non-Fee Amendment

Commissioner for Patents

PO Box 1450

Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Honorable Sir:

Please reconsider the above-identified application as indicated on the following pages.

Respectfully submitted,

*James D. Miller*  
James D. Miller  
Reg. No. 46,932

MacMillan, Sobanski & Todd, LLC

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## AMENDMENTS TO THE SPECIFICATION

Amend the paragraph beginning on page 4, line 10 as follows:

The receiver tube 12 is provided with a hollow interior 22, as clearly illustrated in Figure 2 which receives a trailer hitch bar, not shown. The trailer hitch bar is slid into the interior 22 of the receiver tube 12 until a connecting hole 24 formed in the receiver tube 12 is aligned with a corresponding hole in the hitch bar to receive an appropriate locking pin. The outwardly projecting end of the trailer hitch bar is typically provided with a mounting ball adapted to support the tongue of an associated trailer.

Amend the paragraph beginning on page 5, line 11 as follows:

The reinforcement flange 26 is formed by a cold metal forming process wherein the tube stock used to form the receiver tube 12 is placed in a clamp 32 to secure the outside surface to a predetermined length. Next, a single punch having the same cross sectional configuration as the interior of the receiver tube 12 to be strengthened is inserted into the hollow interior 22 of the tube 12. The outer surfaces of the punch are effective to support the tube 12 during the following cold forming crimping process. It will be understood that one end of the tube 12 stock extends beyond the clamp ~~30~~ 32 to provide sufficient length of unsupported tube 12 stock to form the desired strengthening crimped flange 26.

Amend the paragraph beginning on page 5, line 25 as follows:

Next, a the punch is further inserted into the interior 22 of the receiver tube 12 to commence formation of the crimped reinforcement flange 26. The punch is advanced into the hollow tube interior 22 causing equal wall thicknesses in the end portion of the tube 12 to be forced against the clamp ~~30~~ 32 causing the unsupported tube end to be trapped outside of the clamp ~~30~~ 32 thus preventing the equal wall thickness of the receiver tube 12 from being deformed during the cold forming process. The punch is caused to continue the inward movement until a circumferentially outwardly extending shoulder of the punch meets the unsupported end of the tube 12 and continues until the unsupported tube stock folds outwardly to a developed limit. When the limit is reached, the punch continues and causes the material of the receiver tube 12 to buckle and fold inwardly upon itself until the desired cross-sectional configuration is achieved. The movement of the punch is stopped and the punch is withdrawn.

## AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An elongate receiver tube for a trailer hitch assembly comprising:

a hollow elongate tube having an internal rectangular cross-section and having a first end adapted to receive a trailer hitch bar having a complimentary outer rectangular cross-section, the first end of said tube having an integral reinforcement construction wherein the first end of said tube is provided with an outwardly extending fold formed of substantially two thicknesses of the tube, wherein the outermost end portions are folded against one another by a cold forming process to form a peripheral outwardly extending fold at the first end of said tube, the cold forming process includes the use of a clamp to hold an unfolded portion of the tube ~~and wherein the entire cross section of the clamp is rectangular~~, the fold occurring outside of an axial extent of an internal surface of the clamp and having an inner dimension which is substantially the same as an inner dimension of said tube and an outer dimension greater than an outer dimension of said tube.

2. (Currently Amended) The receiver tube according to Claim 1, wherein the fold has a flat face spaced from the first end of said tube formed against an outer wall of the clamp.

3. (Original) The receiver tube according to Claim 1, wherein the fold has a substantially rounded outer surface.

4. (Currently Amended) An elongate receiver tube for a trailer hitch assembly comprising:

a hollow elongate tube having an internal rectangular cross-section and an external rectangular cross-section, said tube having a first end adapted to receive a trailer hitch bar having a complimentary outer rectangular cross-section to be slidably received in the internal rectangular cross-section of said tube, the first end of said tube having an outwardly extending flange portion formed by a cold forming process, the flange portion formed ~~wholly~~ outside of an axial extent of an internal surface of a clamping structure, wherein a side of the flange facing away from the first end abuts a wall of the clamping structure which is external of the clamping structure, the flange provided with an outwardly extending fold formed of substantially two thicknesses of the tube, the flange portion having an inner dimension which is substantially the same as an inner dimension of said tube and an outer dimension greater than an outer dimension of said tube.

5. (Original) The receiver tube according to Claim 4, wherein the flange portion has a substantially rounded outer surface.

6. (Currently Amended) An elongate receiver tube for a trailer hitch assembly comprising:

a hollow elongate tube having an internal rectangular cross-section and an external rectangular cross-section, said tube having a first end adapted to receive a trailer hitch bar having a complimentary outer rectangular cross-section to be slidably received in the internal rectangular cross-section of said tube, the first end of said tube having a fold with a substantially rounded outer surface, the fold formed by a cold forming process wherein a clamping structure with an internal surface having a rectangular shape over its entire length is used, the flange portion formed ~~wholly~~ outside of an axial extent of the internal surface of the clamping structure, the fold formed of substantially two thicknesses of the tube, the flange portion having an inner dimension which is substantially the same as an inner dimension of said tube and an outer dimension greater than an outer dimension of said tube.

7. (Original) The receiver tube according to Claim 6, wherein a side of the fold facing away from the first end has a flat face formed against a wall of the clamping structure, the wall being external of the clamping structure.

## REMARKS

In order to more clearly define and claim applicant's invention, the above-referenced patent application has been amended.

Claims 1-2, 4, and 6 have been amended.

Claims 1-7 remain in the application for consideration by the Examiner.

The specification has been amended for clarity.

No new matter has been added.

The following remarks are filed in support of the attached Declaration of Inventor.

The receiver tube of the present invention has a number of advantages over the receiver tubing of the prior art. The structure of the receiver tubes includes a flange portion which provides surprisingly great strength to the resultant product. The flange portion is produced when the raw material stock reaches a developed material limit and folds upon itself by a cold forming process wherein the metal material of the flange is caused to flow freely without the addition of any additional energy.

The utilization of supplemental restraints or die members are not required in forming the claimed receiver tube. Also, it has been found that variations in the wall thickness of the raw material stock are compensated for by the free flow of material to the outer dimension of the flange. This enables the utilization of a lower cost, readily available raw material stock in contrast to the higher cost raw material stock having tighter tolerances as needed in the manufacture of known receiver tubes.

Since the resultant product is formed by a free flow cold forming process, the metallurgy of the raw material stock has not been weakened, and the product incorporates maximum strength properties.

It will be readily apparent that by being able to utilize a low cost readily available stock material formed by a free flowing forming process, a product has been produced which has received extensive commercial acceptance.

It is submitted that the claims of record properly define applicant's product and adequately distinguish the same from the prior art known to the applicant.

The most pertinent prior art known to the applicant is U.S. Patent 6,408,672 to Roe, which discloses a die cavity having a recess formed therein into which a tube wall is caused to fold upon itself to form a flange. More particularly, the wall of the tube being formed is

forced or molded into the recess which determines the final shape of the flange. A calculation must be made to determine the quantity of material which must be left outside of the cavity of the clamp prior to the forming process in order to fill the recess of the die cavity during the forming process. Variations in material wall thicknesses are undesirable as they will effect the final shape. Special raw materials having tighter manufacturing tolerances reduce these variations, but result in higher raw material costs.

Should the Examiner deem it necessary to further explore the material discussed above or included in the Declaration of Inventor, it is requested that an interview be arranged in an effort to expedite the prosecution of the application. Should the Examiner consider that the applicant's presence would be desirable, this will be arranged.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
David H. Palmer	)	Group Art Unit:
	)	
Serial No. 10/666,173	)	
	)	Examiner:
Filed: September 19, 2003	)	
	)	
For: ELONGATE RECEIVER TUBE AND	)	Attorney Docket 1-37091
METHOD OF MAKING THE SAME	)	

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March 17, 2004

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. § 1.132

Honorable Sir:

I, David H. Palmer, declare the following:

1. THAT, I am the inventor of the subject matter of the above-identified patent application;
2. THAT, from 1996 to present, I have been employed by Jems of Litchfield, assignee of the above application;
3. THAT, my present position with Jems is Vice President and Owner;
4. THAT, I have over 40 years of experience in the cold forming industry;
5. THAT, the Jems patent application is a reinforcing crimped flange formed on an end of a square cross-section heavy metal gage trailer hitch receiver tube formed by a cold forming process;
6. THAT, the claimed invention has taken into account the variations in tubing raw materials, including the variations in the tube industry standards and tolerances;
7. THAT, the claimed invention is formed by a novel, high volume, and low cost manufacturing process for cold forming the crimped reinforcing flange;
8. THAT, the claimed invention is formed by a process which includes a free flow forming process which results in wall thickness variations in the tubing raw materials being absorbed into the outer dimensions of the flange;

9. THAT, the use of the free flow forming process facilitates adherence to manufacturing tolerances, while permitting variations in the wall thickness of tubing raw materials, thus, standard raw materials can be used resulting in minimized raw material costs;
10. THAT, the claimed invention uses standard metal tubing from multiple sources in the industry;
11. THAT, since standard, low cost tubing raw materials can be used, and due to the improved strength discussed in the Declaration under 37 C.F.R. § 1.132 filed on November 14, 2003, substantial commercial success has been experienced, thus providing a nexus between the commercial success and the claimed invention;
12. THAT, the process used to form the claimed invention uses no mechanical restraints or recesses to alter the free flow process;
13. THAT, the forming of the claimed invention is accomplished outside of the clamp allowing free flow to occur wherein the tubing reaches a developed material limit and folds upon itself to form the flange;
14. THAT, U.S. Pat. No. 6,408,672 to Roe teaches a method of cold forming a tube end using a die cavity including a recess formed therein, the recess has a greater outside dimension than the tube which forms a flange, the process of forming the flange being analogous to a molding operation;
15. THAT, in the method disclosed by Roe, the tube is forced upon itself inside of the recess in order to form the flange, the flange final shape conforming to the shape of the recess;
16. THAT, in the method disclosed by Roe, calculations must be conducted to determine the volume of the recess, and the volume of material needed to fill the recess is obtained from the calculations;
17. THAT, variations in tubing wall thicknesses are not desirable in Roe since the variations will result in a volume of material different than the calculated amount necessary to fill the recess, causing either an undesirable overfilled recess or underfilled recess;
18. THAT, in order to reduce or eliminate the undesirable results due to variations in wall thickness, special and more expensive raw materials having tighter tolerances must be used with the method disclosed by Roe;

In re Application of: David H. Palmer  
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19. THAT, in order to fill the recess using the method disclosed by Roe, press equipment having a much higher capacity than that used in the claimed method must be used, resulting in higher costs; and
20. THAT, the process disclosed in U.S. Pat. No. 3,119,435 to Greenman is considerably different than the claimed process since the material being formed in Greenman is aluminum, which is more easily formed than the steel used in the claimed method.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States code, and that such willful false statements may jeopardize the validity of the above-referenced application or any patent issuing thereon.

Date: 3/19/04

  
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David H. Palmer

**X. RELATED PROCEEDINGS APPENDIX**

None.